An Essay
on the effect of

Chloroform

Respectfully submitted
to the
Hon'd. Medical College
of Pennsylvania
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One Thousand eight hundred & fifty.

For the Doctorate in Medicine
by
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pp. 30.

Not long since a chemical preparation came into use, which not only excited the mind of the profession, but also the public in General, through the many unfortunate results, which it produced, as reported by the Newspapers. This article is Chloroform. After looking over several books about this remedy, I find that it is in many respects very useful and only proved fatal through careless use, which might be prevented in the skillful hands of a regular practitioner.

I selected this agent for my thesis, with a view to show its different qualities, good as well as bad, wherein it has been used in Allopathy, Midwifery & Surgery in particular. The principal about circumstances which have required Chloroform, being to where more or less destined to oblund or render insensible to pain to supprise the sensation of different.

organs to be operated upon, as in cases of difficult labour or some dangerous surgical operation.

It must be desirable for the profession, to find out an agent, which will relieve the pain attendant upon such occasion, and could there be found such an article, which could prove beneficial in these sufferings, without leaving any lasting stain on the system, it would doubtless be a great blessing to mankind. The idea of inducing insensibility does not entirely belong to modern times, but it appears, that something of this kind has occupied the mind of the ancients, as we see from the writings of Dioscorides, who repeatedly mentions the production of General Anaesthasia by Mandragora, and states it as a matter of report, that

local insensibility in a part was capable
of being produced by the Memphian stone.
" The Memphian stone (says he) is found in
" Egypt near Memphis of the size of a calculus
" fatty and of different colours. They say that
" this when bruised and spread over the parts
" that are to be cut or cauterized, produces
" in them a dangerless anaesthesia"
This shows that the idea of obtunding a
single part of the body, against the pain of
an operation, was not unknown in former
times. Several others have written more
or less on this subject as Pliny Paré &c
Dr Moore (1784) recommended the compression
and abtusion of the nerves of the implicated
part. Dr Hickman proposed 1824 Carb. Acid Gas.
Dr Davis advised the use of Nitrous Oxide.
Others recommended the inhalation of.

vapour arising from the watery extract of mandragora or Opium etc.
In latter years Sulph. ether & Chloroform have been used mostly, the first more in Surgical operations, the latter in cases of difficult labour.

Professor Simpson of Edinburgh was the first, who introduced this into the practice of midwifery, & has written extensively on this subject and I shall take the liberty in quoting him sometimes as my authority.

Chemical History and Composition.

Chloroform was discovered at nearly the same time by Soubeiran of France, Guthrie of United States and Liebig of Germany 1831.
It consists of 2 atoms of Carbon, 1 of Hydrogen, 3 of Chlorine; or of 1 atom of formyle & 3 of Chlorine. Hence its Chemical formula $C_2 H Cl_3$ or $Fo. Cl_3$.

Modes of Preparation.

It may be obtained by various processes.

I. By the distillation of a mixture of diluted spirit, pyroxylic or wood spirit, or acetone and Chloride of lime. or

II By making milk of lime or an aqueous solution of caustic alkali, act upon chloral.

III By leading a stream of chlorine gas into a solution of caustic potass in spirits of wine &c

Physical & Chemical Properties

It is a clear limpid liquid as heavy as 1.480, not inflammable; very volatile and boils at 141°. It has a fragrant, fruitlike odour, and a sweet saccharine taste.

As an anaesthetic agent, it possesses over Sulph. Ether several advantages.

1. a less quantity of Chloroform, than of Ether is requisite to produce the desired effects

the usual dose is from 50. 100 drops or 10. 20 inspirations, according to the constitution of the patient.

II The action is more rapid and persistent.

III It is more pleasant to inhale, on account of its agreeable taste & odour.

Dr Simpson who made the most experiments with Chloroform, seems to be disposed to take it as an agent answering every purpose in the practice of midwifery, and he relates a great many very interesting experiments, where it has proved successful, and I shall quote one of the most striking cases

"The lady to whom it was first exhibited
"during parturition, had been previously
"delivered in the country by perforation of
"the head of the infant, after a labour of
"three days' duration. In this, her second

" confinement, pains supervened a fortnight
" before the full time. Three hours and a half
" after they commenced, and, ere the first stage
" of labour was completed, I placed her under
" the influence of Chloroform, by moistening
" with half a teaspoonful of the liquid, a pocket
" handkerchief, rolled up into a funnel shape,
" and with the broad or open end of the funnel
" placed over her mouth & nostrils.
" In consequence of the evaporation of the
" fluid, it was once more renewed in about
" ten or twelve minutes. The child was
" expelled after the inhalation was begun.
" The mother subsequently remained longer
" soporose, than commonly happens after ether
" The squalling of the child did not as usual rouse
" her; and some minutes elapsed after the
" placenta was expelled, and after the child

" was removed by the nurse into another room,
" before the patient awoke. She then turned round
" and observed to me that she had "enjoyed a very
" comfortable sleep and indeed required it, as
" she was so tired, but would now be more
" able for the work before her, believing, as I
" have already stated, that the most complete
" possible quietude formed one of the principal
" secrets, for the successful employment of either
" ether or chloroform. In a little time she
" again remarked that she was afraid her "sleep
" had stopped the pains". Shortly afterwards,
" her enfant was brought in by the nurse from
" the adjoining room, and it was a matter of
" no small difficulty to convince the astonished
" mother that the labour was entirely over,
" and the child presented to her was really
" her "own living baby".

What a gratification would it be for an accoucheur to relieve the female from these horrible sufferings, which harrass the mind weeks before and lessen those endearing feelings of becoming mother, and such an easy and satisfactory way, when the pains of Childbed are according to all authors the most horrible. as:

Dr Denman says in his introduction on mid wifery p. 377. "The distress and pain "which woman often endure are beyond all "description, and seem to be more than "human nature would be able to bear "under any other circumstances".

"This (observed Dr Rigby Lyes of mid wifery p. 133) "is the moment of greatest pain, and the "patient is frequently quite wild and frantic "with suffering, it approaches to a species

"of insanity and shows itself in the most
"quiet and gentle disposition."

If we can thus add to the happiness of our
patients, by imparting to them feelings of
safety and immunity, under one of the
severest trials to which nature exposes them,
we surely follow out, in its truest sense,
the office of a physician, namely "a great
mission of benevolence and utility."

Dr Simpson delivered 150 patients in a state
of Anaesthesia with the following results.

To Children. All the children were born alive
except one, which was expelled dead and
decomposed prematurely. Subsequently one
died with Symptoms of Cyanosis.

To Mothers. In all cases the physical
sufferings, attendant upon the latter stages
have been alleviated or obviated.

In most cases the mothers on waking from the Anaesthetic sleep, have expressed surprise at their feeling of strength, contrasted with their former experience, and on Dr Simpson's experience by annulling the parturient shock, the chances of secondary vascular excitements have been diminished. His firm conviction is, that since he has employed Chloroform, he has seen more rapid recoveries and [illegible] puerperal complications. Two patients died of puerperal fever, but this happened during an epidemic, which also destroyed numbers, who had not been under an Anaesthetic influence.

Mr Carmichael Edinburgh. has exhibited it in Twenty-six cases. Recovery unusual speedy, has heard monthly nurses complain that, by expediting convalescence it will

terminate their profits. All the Children alive and doing well.

Dr Keith has used Chloroform in 234 cases keeping the patients under its influence from half an hour to eight hours.

He states positively that he has seen no symptoms which could be traced to Chloroform, either in the mother or child. The recoveries have been good and the former have felt decidedly stronger than on former occasions.

This agent has been used on the Continent, with tolerable satisfactory results.

As every new improvements in medicine, has ~~been regarded~~ met with a great deal of opposition, so it is also with the use of Chloroform and are not only moral but also religious objections urged against its use. We have to consider the first a little

Allegheny.

nearer, coming as they do from high authority.
Dr Merriman in his work, opposes the employment of Anaesthesia in Natural Labour on the Ground of the great superiority of allowing nature to conduct the whole process and only permits it to be used in instrumental and very tedious labours.
Dr Meigs in a letter to Dr Simpson urges about 5 principal points as his objections
I Dr M objects to Anaesthesia in deliveries requiring Chirurgical Interventions, especially in forceps operations, on the ground that the sensations of the patient, afford us our best aid for the introduction of the instrument.
II Objects to it in Natural Labours, because he thinks ~~of you told~~ that the pain of natural labour should not be annulled, and that it is calculated they are to promote the safety of the mother.

3. "Because he deems the pain a "Physiological Pain."

4. "Because the mother in escaping by it from the "pangs and agonies of labour" may, (in a few rare cases) be thus made to encounter danger to her own life"

5. "Because he does not consider, that the mother encounters danger to her health or life from the endurance of the pain."

This is about all, that can be said in regard to Anaesthesia in Midwifery. I have shown the reasons which have been urged in favor of it and the different objections which oppose it.

How far these arguments are true is impossible for me to say, as my knowledge in Midwifery is only theoretically and not practically, so I must leave it to

older and more experienced men, to give their judgement about it.

In Surgery the Anaesthetic Agents, have been used in all different countries, generally with great success and are according to the last authors considered ~~practical~~ advisable, and are therefore permitted by the profession. When it first began to be employed, it was urged that its adaption produced a greater tendency to primary and secondary hemorrhage, to imperfect union of the wounds, to pneumonical &c., but these ~~arguments~~ objections are now abandonned.

In Ranking's Abstract of Medical Sciences, I find seven cases reported, which proved fatal, but those compared with the many thousand, which have been successful, show little against its use.

The good effect of these Agents are to obvious and have been to satisfactorily established ~~on the last time~~, that it is unnecessary to speak about it farther.

In the Practice of medicine, it has been recommended for Asthma, Spasmodic Coughs, the sorethroat of Scarletfever and other Deseases in which a graseful or soothing medicine is indicated. In the last Cholera Epidemic, it has been used by many practitioners of this city with various success.

When the hand is exposed to an anaesthetic vapour, it betimes presents the sensations of a limb benumbed, the sensations in fact are of partial or commencing paralysis. Usually after a short time, a glowing or burning feeling is perceived in the parts most exposed, and gradually there supervenes

a sensation of thrilling and tingling (like a limb asleep), which deepens more and more. The skin turns red, and the hand at last becomes stiff and clumsy and feels as if enlarged, and painful impressions as pricking, pinchings &c are felt less and less, than in the other unexposed hand. After the hand experimented upon is removed from the vapour, it is generally half an hour or more before its usual normal feelings are quite restored. My intention was as I selected this agent to make some experiments on myself, with the view of getting symptoms, but after several unsuccessful trials I had to give it up. The first feeling I experienced, after taking it was general exhilaration of spirit, which lasted for about 5 to 7 minutes, than dizziness commenced, and

after that I found a feeling of lassitude coming over me, so that I was obliged against my will to lay down & sleep, this tranquillity varied from 15 minutes to half an hour, then the effect seemed to have gone off altogether, to me its action seemed like opium only more rapid.

This Gentlemen concludes the subject of my Thesis, how far I have succeeded in satisfying your wishes, I am not able to tell, yet believe me, that I have taken the greatest trouble, to make it as satisfactory as possible, hoping that a most honorable faculty will look kindly upon this.

I remain Gentlemen

Your most obed^t servant

R. B. Guyton